

controlling data transfer between each user terminal coupled to a first communication network and a second communication network via a gateway and a firewall, said method including the steps of:

5 sending an access request to said gateway from each said user terminal requiring access to said second communication network;

said gateway reading each said access request;

modifying at least one access rule in said firewall to permit access for each said user terminal requesting access based on an authenticated IP address of each said user terminal; and

10 monitoring simultaneously at said firewall transfer of data between each said user terminal and said second communication network.

The method may further include the step of dynamically controlling bandwidth available to each said user terminal in real time. A restricted bandwidth may be allocated on the fly to a single user terminal, a plurality of  
15 user terminals and/or one or more specified user accounts. Bandwidth may be controlled for uploading and/or downloading data.

The method may further include the step of enabling and/or disabling one or more ports of access to each user terminal.

Optionally, a single machine may include the gateway and the firewall.

20 Alternatively, the firewall may be in a different machine from the gateway.

Authentication of the IP address is preferably carried out by the gateway. Authentication may be carried out using an encryption/decryption process.

The method may further include the step of controlling access of a user  
25 terminal to the second communication network from a management terminal

coupled to the first communication network.

The method may further include the step of monitoring a period of time a user terminal has access to the second communication network.

5 The method may further include the step of monitoring a quantity of data a user terminal uploads and/or downloads.

The method may further include the step of monitoring a cost to a user of their user terminal having access to the second communication network.

10 According to another aspect, the invention resides in a system for monitoring and controlling data transfer in communication networks, said system comprising:

one or more user terminals coupled to a first communication network;

a second communication network coupled to said first communication network via a gateway and a firewall;

15 wherein said firewall simultaneously monitors transfer of data between each said user terminal and said second communication network for each user terminal having an authenticated IP address that has access to said second communication network.

Optionally, a single machine may include the gateway and the firewall. Alternatively, the firewall may be in a different machine from the gateway.

20 Authentication of the IP address is preferably carried out by the gateway and may involve an encryption/decryption process to authenticate a remote terminal.

25 The system may further include dynamically controlling bandwidth available to each said user terminal in real time. A restricted bandwidth may be allocated on the fly to a single user terminal, a plurality of user terminals

and/or one or more specified user accounts. Bandwidth may be controlled for uploading and/or downloading data.

According to a further aspect, the invention resides in a gateway for monitoring and controlling data transfer in communication networks, said gateway comprising:

a firewall for permitting access to a second communication network for each user terminal coupled to a first communication network having an authenticated IP address;

wherein said gateway monitors simultaneously at said firewall transfer of data between each said user terminal and said second communication network.

The gateway may further comprise means for dynamically controlling bandwidth allocated to each said user terminal in real time.

The gateway may further comprise means for enabling and/or disabling one or more ports of access to each user terminal.

Further aspects and features of the invention will become apparent from the following description.

### BRIEF DESCRIPTION OF THE DRAWINGS

To assist in understanding the invention and to enable a person skilled in the art to put the invention into practical effect preferred embodiments of the invention will be described by way of example only with reference to the accompanying drawings, wherein:

FIG. 1 shows a schematic representation of a computer system in accordance with the present invention in which the method and apparatus of

## CLAIMS

- 5 1. A method of monitoring and controlling data transfer between each user terminal coupled to a first communication network and a second communication network via a gateway and a firewall, said method including the steps of:
- sending an access request to said gateway from each said user terminal requiring access to said second communication network;
- said gateway reading each said access request;
- modifying at least one access rule in said firewall to permit access for  
10 each said user terminal requesting access based on an authenticated IP address of each said user terminal requesting access; and
- monitoring simultaneously at said firewall the transfer of data between each said user terminal and said second communication network.
- 15 2. The method of claim 1 further including the step of dynamically controlling bandwidth available to one or more of said user terminals in real time.
- 20 3. The method of claim 2, wherein a restricted bandwidth is allocated to a single user terminal.
4. The method of claim 2, wherein a restricted bandwidth is shared between a plurality of user terminals.

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5. The method of claim 2, wherein bandwidth is restricted for uploading data and/or downloading data.

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6. The method of claim 2, wherein a restricted bandwidth is allocated to one or more terminals for a prescribed time period.

7. The method of claim 2, wherein a restricted bandwidth is allocated to one or more terminals on the basis of a priority status allocated to the one or more terminals or a user account.

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8. The method of claim 1, wherein the IP address of a user terminal is authenticated on the basis that the user terminal has previously been authenticated by the gateway using an encryption/decryption process.

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9. The method of claim 1 further including the step of enabling and/or disabling one or more ports of access to a user terminal.

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10. The method of claim 1 further including the step of controlling access of a user terminal to the second communication network from a management terminal coupled to the first communication network.

11. The method of claim 1 further including the step of monitoring a period of time a user terminal has access to the second communication network.

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12. The method of claim 1 further including the step of monitoring a quantity of data a user terminal uploads and/or downloads.

13. The method of claim 1 further including the step of monitoring a cost to a user of their user terminal having access to the second communication network.

14. A system for monitoring and controlling data transfer in communication networks, said system comprising:

one or more user terminals coupled to a first communication network;  
a second communication network coupled to said first communication network via a gateway and a firewall;  
wherein said firewall simultaneously monitors transfer of data between each said user terminal and said second communication network for each user terminal having an authenticated IP address that has access to said second communication network.

15. The system of claim 14, wherein a single machine comprises both the gateway and the firewall.

16. The system of claim 14, wherein the firewall is in a different machine from the gateway.

17. The system of claim 14, wherein authentication of the IP address is carried out by the gateway.

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18. The system of claim 17, wherein authentication employs an encryption/decryption process to authenticate a remote terminal.

19. The system of claim 14, wherein bandwidth available to the one or more user terminals is dynamically controlled in real time.

20. The system of claim 14, wherein a restricted bandwidth is allocated to a single user terminal.

21. The system of claim 14, wherein a restricted bandwidth is shared between a plurality of user terminals.

22. The system of claim 14, wherein a restricted bandwidth is allocated to a user account.

23. The system of claim 14, wherein bandwidth is restricted for uploading data and/or downloading data.

24. A gateway for monitoring and controlling data transfer in communication networks, said gateway comprising:  
a firewall for permitting access to a second communication network for each user terminal coupled to a first communication network having an authenticated IP address;

wherein said gateway monitors simultaneously at said firewall transfer of data between each said user terminal and said second communication network.

5 25. The gateway of claim 24 further comprising means for dynamically controlling bandwidth allocated in real time to each said user terminal.

26. The gateway of claim 24 further comprising means for enabling and/or disabling one or more ports of access to each user terminal.